NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

SURATHKAL, MANGALORE - 575 025

Course Code – CS111

Course Name – Computer Programming Lab

Lab - 02

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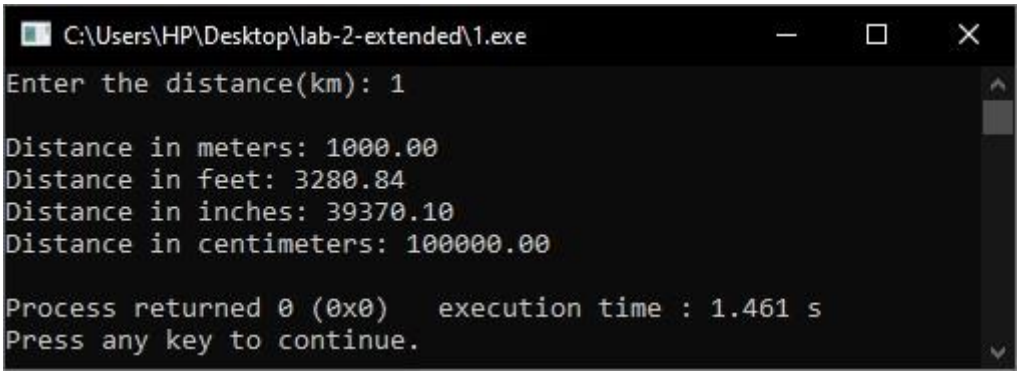
Question – 1

The distance between two cities (in km.) is input through the keyboard. Write a program to convert and print this distance in meters, feet, inches and centimeters.

Answer

```c
#include<stdio.h>
int main()
{
    float dis_in_km;
    printf("Enter the distance(km): ");
    scanf("%f", &dis_in_km);
    float dis_in_mtr, dis_in_ft, dis_in_inch, dis_in_cm;
    // calculate
    dis_in_mtr = dis_in_km * 1000;
    dis_in_ft = dis_in_km * 3280.84;
    dis_in_inch = dis_in_km * 39370.1;
    dis_in_cm = dis_in_km * 100000;
    // printing
    printf("\nDistance in meters: %.2f\n", dis_in_mtr);
    printf("Distance in feet: %.2f\n", dis_in_ft);
    printf("Distance in inches: %.2f\n", dis_in_inch);
    printf("Distance in centimeters: %.2f\n", dis_in_cm);
    return 0;
}
```

Output



Question-2

The length & breadth of a rectangle and radius of a circle are input through the keyboard. Write a program to calculate the area & perimeter of the rectangle, and the area & circumference of the circle.

Answer

```c
#include<stdio.h>
#define PI 3.1416
int main()
{
    float length, breadth, radious;
    printf("Enter Length, Breadth & Radious: ");
    scanf("%f %f %f",&length, &breadth, &radious);
    float rect_area, rect_perimeter, circ_area, circ_circum;
    // calculation
    rect_area = length * breadth;
    rect_perimeter = 2*(length+breadth);
    circ_area = PI*radious*radious;
    circ_circum = 2*PI*radious;
    //printing
    printf("\nArea (rectangle): %.2f\n",rect_area);
    printf("Perimeter (rectangle): %.2f\n",rect_perimeter);
    printf("Area (circle): %.2f\n",circ_area);
    printf("Circumference (circle): %.2f\n",circ_circum);
    return 0;
}
```

Output

```
C:\Users\HP\Desktop\lab-2-extended\2.exe
Enter Length, Breadth & Radious: 10 10 10

Area (rectangle): 100.00
Perimeter (rectangle): 40.00
Area (circle): 314.16
Circumference (circle): 62.83

Process returned 0 (0x0)   execution time : 4.568 s
Press any key to continue.
```

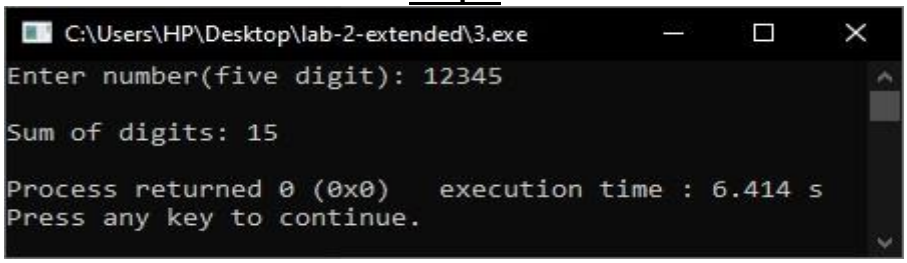
Question-3

If a five-digit number is input through the keyboard, write a program to calculate the sum of its digits.

Answer

```c
#include<stdio.h>
int main()
{
    int num, sum=0;
    printf("Enter number(five digit): ");
    scanf("%d", &num);
    if((num>9999) && (num<100000))
    {
        // let num = 12345
        int rem = num%10;  // 12345%10 = 5
        sum += rem;        // 0+5 = 5
        rem = (num/10)%10; // (12345/10=1234)%10=4
        sum += rem;        // 5+4 = 9
        rem = (num/100)%10; //(12345/100=123)%10=3
        sum += rem;         // 9+3=12
        rem = (num/1000)%10; // (12345/1000=12)%10=2
        sum += rem;          //12+2 = 14
        rem = (num/10000)%10; //(12345/10000=1)%10=1
        sum += rem;           // 14+1=15
        printf("\nSum of digits: %d\n", sum);
    }
    else
        printf("\nInvalid Input\n");
}
```

Output



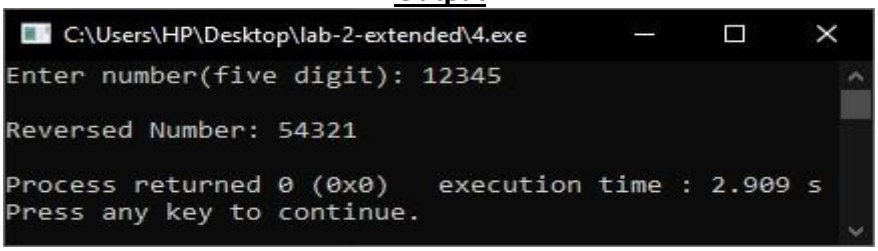
Question-4

If a five-digit number is input through the keyboard, write a program to reverse the number.

Answer

```c
#include<stdio.h>
int main()
{
    int num, rev_num=0;
    printf("Enter number(five digit): ");
    scanf("%d", &num);
    if((num>9999) && (num<100000))
    {
        // let num = 12345
        int rem = num%10;  // 12345%10 = 5
        rev_num += rem*10000;         // 0+5*10000 = 50000
        rem = (num/10)%10; // (12345/10=1234)%10=4
        rev_num += rem*1000;         // 50000+4*1000 =54000
        rem = (num/100)%10; //(12345/100=123)%10=3
        rev_num += rem*100;          // 54000+3*100=54300
        rem = (num/1000)%10; // (12345/1000=12)%10=2
        rev_num += rem*10;           //54300+2*10 = 54320
        rem = (num/10000)%10; //(12345/10000=1)%10=1
        rev_num += rem*1;            // 54320+1*1=54321
        printf("\nReversed Number: %d\n", rev_num);
    }
    else
        printf("\nInvalid Input\n");
}
```

Output



Question-5

If the total selling price of 15 items and the total profit earned on them is input through the keyboard, write a program to find the cost price of one item.

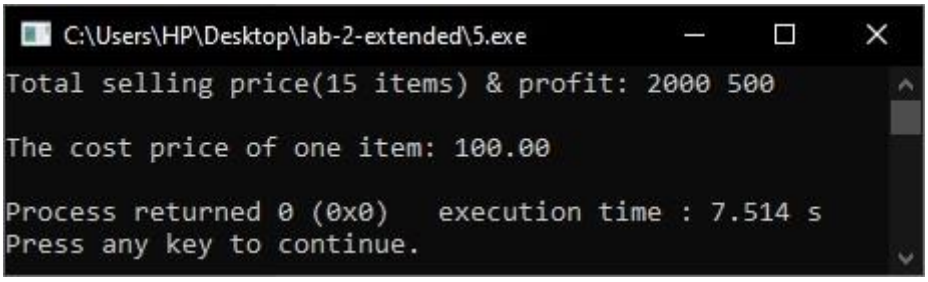
Answer

```c
#include<stdio.h>
int main()
{
    float total_price, profit;
    printf("Total selling price(15 items) & profit: ");
    scanf("%f %f",&total_price, &profit);
    float actual_cost, per_piece_price;

    //calculation
    actual_cost = total_price - profit;
    per_piece_price = actual_cost/15;

    printf("\nThe cost price of one item: %.2f\n",per_piece_price);
    return 0;
}
```

Output



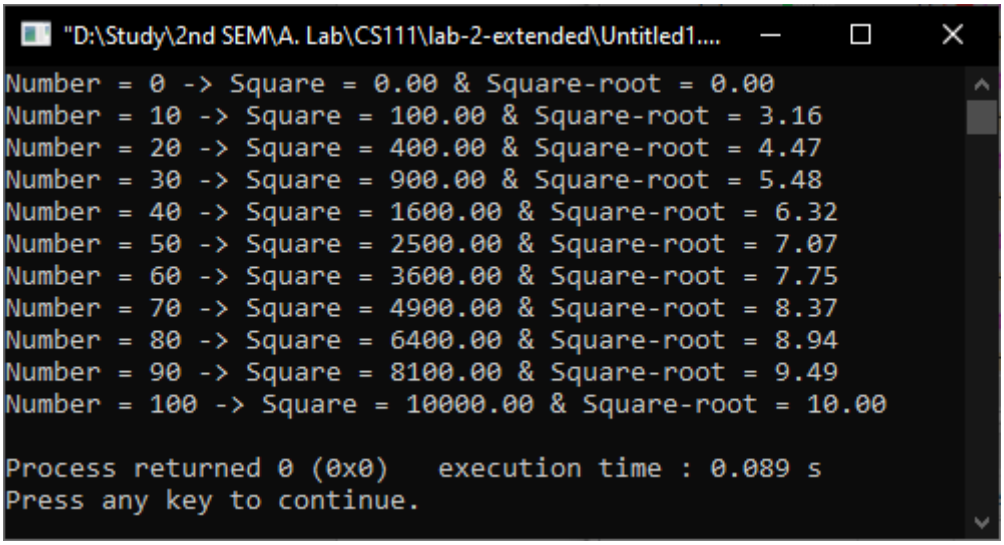
Question-6

Write a program to compute the values of square-roots and squares of the numbers 0 to 100 in steps 10

Answer

```c
#include<stdio.h>
#include<math.h>
int main()
{
    float n = 0;
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=10
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=20
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=30
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=40
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=50
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=60
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=70
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=80
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=90
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    n+=10;   // n=100
    printf("Number = %.0f -> Square = %.2f & Square-root = %.2f\n",n,n*n,sqrt(n));
    return 0;
}
```

Output



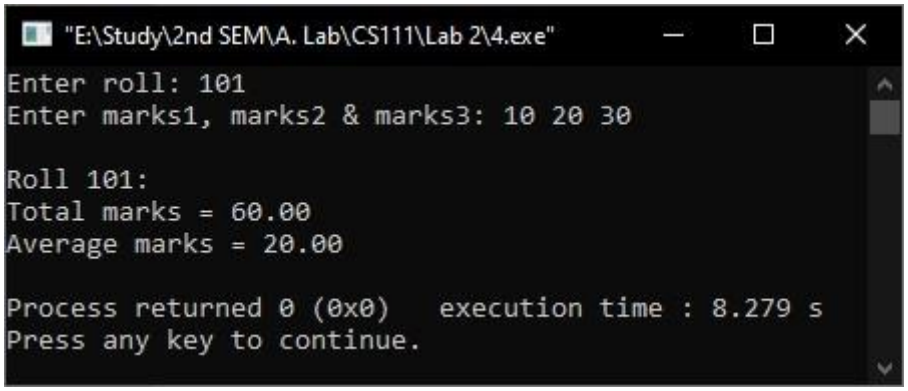
Question-4 (previous week's)

Program to accept student roll no, marks in 3 subjects and calculate total, average of marks and print them with appropriate messages

Answer

```c
#include<stdio.h>
int main()
{
    int roll;
    float marks1, marks2, marks3, sum, avg;
    printf("Enter roll: ");
    scanf("%d",&roll);
    printf("Enter marks1, marks2 & marks3: ");
    scanf("%f %f %f",&marks1, &marks2, &marks3);
    // calculation
    sum = marks1+marks2+marks3;
    avg = sum/3;
    printf("\nRoll %d:\n",roll);
    printf("Total marks = %.2f\n", sum);
    printf("Average marks = %.2f\n",avg);
    return 0;
}
```

Output


"E:\Study\2nd SEM\A. Lab\CS111\Lab 2\4.exe"
Enter roll: 101
Enter marks1, marks2 & marks3: 10 20 30
Roll 101:
Total marks = 60.00
Average marks = 20.00
Process returned 0 (0x0)   execution time : 8.279 s
Press any key to continue.